

Paper Title: Analytical Tools for Space Suit Design

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Abstract:

As indicated by the implementation of multiple small project teams within the agency, NASA is adopting a lean approach to hardware development that emphasizes quick product realization and rapid response to shifting program and agency goals. Over the past two decades, space suit design has been evolutionary in approach with emphasis on building prototypes then testing with the largest practical range of subjects possible. The results of these efforts show continuous improvement but make scaled design and performance predictions almost impossible with limited budgets and little time. Thus, in an effort to start changing the way NASA approaches space suit design and analysis, the Advanced Space Suit group has initiated the development of an integrated design and analysis tool. It is a multi-year- if not decadal- development effort that, when fully implemented, is envisioned to generate analysis of any given space suit architecture or, conversely, predictions of ideal space suit architectures given specific mission parameters. The master tool will exchange information to and from a set of five sub-tool groups in order to generate the desired output. The basic functions of each sub-tool group, the initial relationships between the sub-tools, and a comparison to state of the art software and tools are discussed.